1-73. Possible responses: Counting up or down a column by the number of that column, counting across a row using its horizontal pattern, following the pattern along a diagonal, finding the corresponding entry with the same two factors, finding the number exactly between two numbers to the left and right or above and below the missing entry, etc.

1-74. Possible response: A prime number has only two factors and one of those factors must be 1, so it must be in the 1 row and 1 column only.

1-75. See Suggested Lesson Activity for expected student responses.

1-76. See below:

a. 36 appears in the 3 row and 12 column, the 4 row and 9 column, the 6 row and 6 column, the 9 row and 4 column, and the 12 row and 3 column.

b. Yes. It would appear four more times: 1 row and 36 column, 2 row and 18 column, 18 row and 2 column, 36 row and 1 column.

c. 1 and 36, 2 and 18, 3 and 12, 4 and 9, 6 and 6; the factor pairs are the row and column headings where 36 appears in the table. The factors pairs also describe length and width of a rectangular array. 36 has 9 factors, 1, 2, 3, 4, 6, 9, 12, 18, and 36.

1-77. See below:

a. Students should recognize that there are only 3 possible rectangular arrays, assuming a 12 by 1 rectangle is seen as the same as a 1 by 12 rectangle.

b. 5 rectangular arrays, 10 appearances in the table, each rectangular array indicates two appearances in the table.

c. 5 rectangular arrays, 9 appearances in the table, the 6 by 6 array indicates only one appearance in the table. The pattern does not apply because 36 is a "square" number.

1-78. See below:

a. 1, 2, 4, 5, 8, 10, 20, 25, 40, 50, 100, and 200

b. 2 and 5

c. $2 \cdot 2 \cdot 2 \cdot 5 \cdot 5$ in any order

d. She rewrote each previous step with factors, whether they were prime or not.

e. $5 \cdot 2 \cdot 5 \cdot 2 \cdot 2$ in any order. It does not matter how Tatiana factored in her second step; the last step is always the same but in a different order.

1-79. See below:

a. $2 \cdot 2 \cdot 5 \cdot 5$

b. $2 \cdot 2 \cdot 3 \cdot 3$

c. $2 \cdot 3 \cdot 3 \cdot 3$

d. $2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$

1-80. See below:

a. 6

b. $2^3 \cdot 5^2$

c. a: $2^2 \cdot 5^2$, b: $2^2 \cdot 3^2$, c: $2 \cdot 3^3$, d: $2^3 \cdot 3 \cdot 5^2$

1-81. See below:

a. When you multiply the numbers at opposite corners, the two products are equal.

b. See the "Universal Access" section of the lesson notes for possible responses.

1-82. See below:

a. The number is prime, appears only on the edges of the multiplication table, has one pair of factors, can be represented with one rectangular array.

b. The number is composite, a perfect square, will appear in the upper left to lower right diagonal, has four factor pairs, can be represented with four different rectangular arrays. This number is 64.

c. The number is composite, has four factor pairs, can be represented with four different rectangular arrays. This number is not square. The number is 24.

d. A number that appears an even number of times is not a perfect square. A number that appears an odd number of times is a perfect square. Explanations vary.

1-83. Sample answer: $28 = 1 + 2 + 4 + 7 + 14$; The next largest perfect number is 496.